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3M INNOVATIVE PROPERTIES COMPANY			BERMAN, SUSAN W	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/911279
Date: 07/23/2001
Appellant(s): Ylitalo et al.

James D. Withers
For Appellant

MAILED
MAR 12 2004
GROUP 1700

EXAMINER'S ANSWER

This is in response to the appeal brief filed 01/12/2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

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(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The amendment to the Specification after final rejection filed on 09-26-2003 has been entered.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: The rejections of claims over EP 0974626 A1 (Pearlstine et al) in view of WO '873, the rejection of claims over US 5,863,320 (Breton et al) in view of WO '873 and the rejection of claims over WO 99/07796 (Smith) are withdrawn in order to simplify the issues. EP '626, US '320 and WO '796 are considered to be cumulative of the teachings of Held or Caiger et al.

(7) *Grouping of Claims*

The rejection of claims 1-20, 22-28 and 31-33 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7). No statement has been found with respect to claim 23.

Appellant's brief includes a statement that claims 21, 29 and 30 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). Appellant provides reasons why claim 30 does not stand or fall with claim 1 on page 16 and why claim 29 does not stand or fall with claim 1

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(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

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(7) *Grouping of Claims*

The rejection of claims 1-20, 22-28 and 31-33 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7). No statement has been found with respect to claim 23.

Appellant's brief includes a statement that claims 21, 29 and 30 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). Appellant provides reasons why claim 30 does not stand or fall with claim 1 on page 16 and why claim 29 does not stand or fall with claim 1

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bridging pages 21-22. Appellant provides reasons why claim 21 does not stand or fall together with claim 1 on pages 29-31.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

WO 01/30873	3M INNOVATIVE PROPERTIES CO.	May 3,2001
5,852,075	Held	12-1998
6,114,406	Caiger et al.	9-2000

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 1-13, 18-21, 23 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held (5,852,075) in view of WO 01/30873.

Held discloses a surfactant system for ink jet inks containing an aqueous carrier and a colorant. The surfactant system comprises a mixture of a siloxane surfactant and a fluorinated surfactant. Held uses a fluoroalcohol substituted monoether with polyethylene glycol as the fluorinated surfactant in the examples (see Ink preparations 1-5). See column 1, lines 6-10 and lines 36-39, column 6, line 41, to column 7, line 47, and column 8, lines 31-54. See the C₆ to C₁₆ perfluoroalkyl polyether surfactant no. 4 in Table 1.

WO 01/30873 discloses C₄F₉-group containing fluorochemical surfactants derived from nonafluorobutanesulfonyl fluoride corresponding to the structures of the instantly claimed surfactants. See

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Formulas I, II and III on pages 3-6. WO'873 teaches that the disclosed surfactants "lower the surface tension of water and other liquids in the same or similar low values achieved by premier surfactants such as those derived from perfluorooctane sulfonyl fluoride" (Abstract and page 14, lines 1-20). WO '873 further teach using the disclosed surfactants as leveling agents in inks (page 25, lines 17-19).

It would have been obvious to one skilled in the art to select a fluoroalcohol substituted monoether with polyethylene glycol as the fluorinated surfactant in the surfactant mixture in the ink jet ink compositions disclosed by Held. Held provides motivation by using a fluoroalcohol substituted monoether with polyethylene glycol in the examples (see Ink preparations 1-5). It would have been obvious to one skilled in the art to employ a C_4F_9 -group containing fluorochemical polyoxyalkylene surfactant taught by WO '873 for the fluorinated surfactants containing a C_6 to C_{22} perfluoralkyl group and polyether groups taught by Held in the ink jet ink compositions disclosed by Held. One skilled in the art at the time of the invention would have been motivated by an expectation of providing similar or improved surfactant properties because the surfactants disclosed by WO '873 are fluorinated polyethers, thus providing a fluorinated surfactant analogous to those disclosed by Held. Held provides motivation by teaching that there is a need for aqueous ink jet inks having reduced surface tension and improved wetting out capabilities (column 1, lines 36-39). WO '873 provides motivation to employ the disclosed C_4F_9 -group containing fluorochemical surfactants by teaching that the disclosed surfactants "lower the surface tension of water and other liquids in the same or similar low values achieved by premier surfactants such as those derived from perfluorooctane sulfonyl fluoride" and function as leveling agents in ink compositions. With respect to claims 23 and 26-29, it would have been obvious to one skilled in the art to employ the ink compositions disclosed by Held in a method of ink jet printing comprising ejecting the ink compositions from an ink jet printhead onto a substrate because Held teaches that the disclosed compositions are suitable inks for ink jet printers.

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II. Claims 1-17, 19-29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caiger et al (6,114,406) in view of WO 01/308073.

Caiger et al disclose radiation curable ink jet ink compositions comprising UV radiation curable acrylate monomers and oligomers, a photoinitiator and a fluorosurfactant. Caiger et al teach that suitable surfactants are preferably non-ionic, such as C₈ Fluorad FC430, and use a fluoro surfactant in each of the examples (column 3, lines 52-55). The compositions are preferably organic solvent-free and non-aqueous (see the examples).

WO 01/30873 discloses C₄F₉-group containing fluorochemical surfactants derived from nonafluorobutanesulfonyl fluoride corresponding to the structures of the instantly claimed surfactants. . See Formulas I, II and III on pages 3-6. WO'873 teaches that the disclosed surfactants "lower the surface tension of water and other liquids in the same or similar low values achieved by premier surfactants such as those derived from perfluorooctane sulfonyl fluoride" (Abstract and page 14, lines 1-20). WO '873 further teach using the disclosed surfactants as leveling agents in inks (page 25, lines 17-19).

It would have been obvious to one skilled in the art to employ the C₄F₉-group containing fluorochemical surfactants taught by WO '873 as the fluoro surfactant in the ink compositions disclosed by Caiger et al. Caiger et al teach that the surfactant is preferably a nonionic surfactant and a fluoro surfactant, thus providing motivation to employ nonionic fluorosurfactants, as disclosed by WO '873, in the disclosed ink compositions. Furthermore, Caiger et al do not limit the surfactants to those specifically used in the examples. WO '873 provides motivation to employ the disclosed C₄F₉ -group containing fluorochemical surfactants by teaching that the disclosed surfactants "lower the surface tension of water and other liquids in the same or similar low values achieved by premier surfactants such as those derived from perfluorooctane sulfonyl fluoride" and function as leveling agents in ink compositions. It would have been obvious to one skilled in the art at the time of the invention to expose the disclosed ink jet ink

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compositions to actinic radiation, such as UV radiation, in order to polymerize the ink because Caiger et al teach radiation curable compositions containing a photoinitiator.

III. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held or Caiger et al, each in view of WO 01/30873, as applied to claims 1, 23, 26 and 30 above, and further in view of Adkins et al (6,113,679). Each of the primary references discloses ink jet inks for printing on a substrate. Adkins et al disclose inkjet inks comprising analogous components, such as a binder and a fluorochemical surfactant, and teach that the receiving substrate can be polymeric films, such as acrylic-containing films, and that the films can be retroreflective (column 5, line 60, to column 6, line 32. Thus, It would have been obvious to one skilled in the art at the time of the invention to apply the ink jet ink compositions taught by the combination of any of the primary references with WO '873 to a polymethylmethacrylate film that is retroreflective, as taught by Adkins. The reason is that the ink jet ink compositions are very similar in composition and would be expected to be successfully applied to a film such as polymethylmethacrylate that is retroreflective because Adkins et al teach such an application for the disclosed ink jet inks.

(11) Response to Argument

Appellant argues that one skilled in the art would not have expected the C₄ fluorochemical sulfonamide surfactants disclosed by WO '873 (Savu et al) to be suitable for ink jet ink applications and would not have been motivated to use the disclosed surfactants in ink jet ink compositions. See the Appeal Brief, page 15, 2nd paragraph. It is not agreed that the examiner "suggests" that the teaching of Held had any shortcomings with regard to the surfactant system. It is agreed that Held does not teach the use of a C₄F₉-group containing species of fluorochemical surfactants. WO '873 is relied upon for teaching a C₄F₉-group containing species of fluorochemical surfactants for use in compositions such as ink compositions. Held provides motivation to employ fluorinated surfactants in ink jet ink compositions

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by disclosing fluorinated surfactants for use in ink jet ink compositions. The combination of the teachings of the references is based on the teaching of Held to use a fluorinated surfactant containing a perfluoroalkyl group having 6 to 22 carbon atoms, a sulfonamido linking group and a water soluble oxyalkylene group (see column 6, lines 43-65) and the teaching of analogous fluorochemical sulfonamide surfactants and their advantages by WO '873. While it is agreed that WO '873 does not specifically mention ink jet inks, WO '873 does teach using the disclosed surfactants in ink compositions (page 25). The motivation for employing surfactants disclosed by WO '873 in the ink jet ink compositions taught by Held is clearly set forth in the rejection under 35 USC 103(a) above.

Appellant argues that one skilled in the art would not have expected the C₄ fluorochemical sulfonamide surfactants disclosed by WO '873 (Savu) to be suitable for ink jet ink applications and would not have been motivated to use the disclosed surfactants in ink jet ink compositions. See the Appeal Brief, bridging pages 20-21, and page 30. It is not agreed that the examiner "suggests" that the teaching of Caiger et al had any shortcomings with regard to the surfactant system. It is agreed that Caiger et al do not teach the use of a C₄F₉-group containing species of fluorochemical surfactants. WO '873 is relied upon for teaching a C₄F₉-group containing species of fluorochemical surfactants in compositions such as ink compositions. Caiger et al provide motivation to employ fluorinated surfactants in ink jet ink compositions by disclosing fluorinated surfactants for use in ink jet ink compositions. The combination of the teachings of the references is based on the teaching of Caiger et al to use a fluorinated surfactant such as a C₈ (perfluorooctane) fluorinated surfactant (see column 3, lines 52-55) and the teaching of fluorochemical sulfonamide surfactants and their advantages by WO '873. While it is agreed that WO '873 does not specifically mention ink jet inks, WO '873 does teach using the disclosed surfactants in ink compositions (page 25). The motivation for employing surfactants disclosed by WO '873 in the ink jet ink compositions taught by Caiger et al is clearly set forth in the rejection under 35 USC 103(a) above.

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The perfluorinated sulfonamido oxyalkylene surfactants taught by Held or Caiger et al and the surfactant of formula III containing perfluorinated, sulfonamido and oxyalkylene moieties disclosed by WO '873 are considered to be analogous surfactants in terms of chemical structure and surfactant properties as known in the art. WO '873 teaches that the disclosed polymeric C_4F_9 -group containing fluorochemical polyoxyalkylene surfactants of formula I or formula II are equivalent to the surfactants of formula I and/or can be used in admixture with the surfactant of formula I, thus WO '873 is considered to teach that any of the disclosed fluorinated surfactants containing a C_6 to C_{22} perfluoralkyl group, sulfonamido groups and polyether groups would be useful surfactants in the ink compositions disclosed by Held or by Caiger et al. WO '873 specifically teaches that surfactants derived from perfluorobutanesulfonyl fluoride have surface activities that surprisingly rival the surface activities of homologs made from perfluorooctane segments, such as perfluorooctanesulfonyl fluoride, which correspond to the surfactants taught by Held and Caiger et al (see page 2, lines 13-16). Thus, one of ordinary skill in the art at the time of the invention would have been motivated to substitute that surfactants containing perfluorobutanesulfonyl groups for surfactants containing perfluorooctanesulfonyl groups by a reasonable expectation of successfully providing an ink jet ink and also by an expectation of providing the advantageous surface activities taught by WO '873. WO '873 teaches reduction of surface tension in solutions and suggests foam stability as well.

Appellant argues that the teaching of WO '873 is outside the scope of the ink jet ink compositions disclosed by Held or by Caiger et al. This argument is not persuasive because all three patents are concerned with fluorinated surfactants containing sulfonamido groups and oxyalkylene groups and providing surfactant properties in compositions. Each of Held and Caiger et al disclose ink jet ink compositions. WO '873 teaches various kinds of compositions, including ink compositions.

With respect to claim 21, appellant argues that ink compositions having a "Foam Stability Test" value of less than 30 % is not taught in the cited references. Appellant argues that there is no motivation

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for one skilled in the art to substitute a foam generating surfactant as disclosed in WO '873 in an ink jet ink composition as disclosed by Held or by Caiger et al due to their ability to generate foam. This argument is not persuasive because WO '873 does not teach that the disclosed surfactants generate foam in an ink composition. What WO '873 teaches about foam is that the disclosed fluorochemical surfactants are useful as oil well stimulation additives because of their ability to form a stable foam when adding a gas such as carbon dioxide or nitrogen to water that is saturated with a hydrocarbon (page 22, lines 7-25). Claim 69 of WO '873, pointed out by appellant, requires mixing the surfactant solution with a gas to form a stable foam. The example of foam stability in WO '873 involves adding heptane to an acrylate composition to obtain a stable sea water foam upon shaking. This teaching does not appear to be relevant to use of the surfactants in ink jet ink compositions, as instantly claimed, because the ink jet ink compositions in the cited art are not based upon adding a gas to water that is saturated with a hydrocarbon. However, WO '873 teaches foam stability for compositions comprising the disclosed surfactants, thus suggesting that foam stability would be an expected property of compositions containing the disclosed surfactants. Appellant presents comparative data in the specification in tables 11-15 showing a difference in foam stability for the compositions according to the invention compared with Fluorad FC-431. However, it is not clear whether this surfactant is representative of the cited prior art and/or whether the results can be considered to be unexpected in view of the teaching of WO '873. In any case claim 23 is not considered to be commensurate in scope with what is shown. Furthermore, the claim recitation with respect to foam stability is considered to set forth an inherent property of a composition according to instant claim 1. Thus, a prior art composition corresponding to that of claim 1 would be expected to inherently possess the same property, in the absence of evidence to the contrary.

With respect to claim 23, appellant argues that a method of ink jet printing comprising ejecting an ink jet composition of claim 1 from an ink jet printer head onto a substrate is not taught in Held in combination with WO '873. With respect to claim 30, appellant argues that an article of manufacture

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having an ink jet composition wherein the article comprises a component for an outdoor sign, a roadway, a motor vehicle, a boat, an aircraft, or furniture is not taught in Held and WO '873. This argument is not persuasive because Held teaches ink jet printing on an image recording material in column 8, lines 30-55.

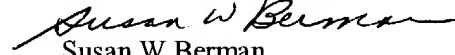
With respect to claim 23, appellant argues that a method of ink jet printing comprising ejecting an ink jet composition of claim 1 from an ink jet printer head onto a substrate is not taught in Caiger et al in combination with WO '873. With respect to claim 29, appellant argues that an article of manufacture having an ink jet composition wherein the article comprises single or multiplayer constructions of paper, cardboard, non-woven fabric, leather, microporous film and combinations is not taught in Caiger et al and WO '873. This argument is not persuasive because Caiger et al teach ink jet printing such as label printing (column 1, lines 5-9 and lines 25-32, and claim 14).

With respect to claims 31-32, appellant argues that it is not clear why one of ordinary skill in the art would have sought out a specific substrate, such as a retroreflective substrate such as disclosed by Adkins et al. The teaching of Adkins et al is relied upon for teaching that it is known to employ ink jet inks for printing on a retroreflective substrate. This teaching is considered to be set forth in analogous art because the disclosures of Held, Caiger et al and Adkins et al are concerned with ink jet inks employing fluorochemical surfactants. Thus one of ordinary skill in the art would have been expected to have known about the application of ink jet inks to retroreflective substrates, as shown by the disclosure of Adkins et al.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Susan W Berman
Primary Examiner
Art Unit 1711

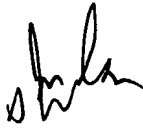
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March 3, 2004 March 4, 2004

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